



10-03-02

3641

# Memorandum

**To:** LIANA CHASE

**From:** BRENDA PHILLIPS, OFFICE OF COUNSEL, COASTAL SYSTEMS STATION

**Date:** 9/18/2002

**Re:** Ser No. 09/030518

Per our conversation 9 Sep 02, enclosed please find copies of all documentation from subject patent application. Hopefully this will help speed up reconstruction process.

If you need additional information please contact me at (850) 234-4940.

Thanks,

Brenda Phillips  
Legal Assistant  
Coastal Systems Station  
6703 W. Hwy. 98  
Panama City FL 32407-7001

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OFFICE OF NAVAL RESEARCH  
DEPARTMENT OF THE NAVY

OFFICE CSS

SERIAL No. 09/030578

FIELD 030518

DIVISION \_\_\_\_\_

INVENTOR Robert Woodall

Elise Garcia

Gilberto Trizarry

TITLE Line Charge Detonating Cord  
and Strength Member Segment  
Connector System

Attorney of Record Harvey A. Gilbert

Disclosures received 8-12-97

Executed \_\_\_\_\_

License \_\_\_\_\_

Assignment 2/17/98

Serial 9010

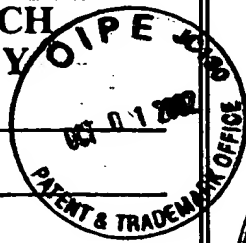
Frame 0543

Application of Case No. \_\_\_\_\_

Parent of \_\_\_\_\_ Case No. \_\_\_\_\_

ALLOWED \_\_\_\_\_

PATENT No. \_\_\_\_\_ Date \_\_\_\_\_



NAVY CASE No. 78635

BRANCH CASE No. \_\_\_\_\_

ACTIONS

Received M4 78635 8/21/97  
M4 Appln Contracted to James H. A.  
Received 12/97  
Pat Appln to PTO w/ formal drawing 2/17/98  
Appln filed Feb 23, 1998  
M4 to PTO w/ formal drawing 2/23/98  
Assignment recorded 2/17/98  
Filing Receipt 2/23/98  
O/A received  
O/A to PTO (Contract) 12-21-98  
O/A to PTO 1-20-99  
Formal Drawing, w/ O/A to  
PTO 1-20-99  
Issue fee to PTO 4-12-99  
Rec'd Notice of Allowance 8-2-00  
Response to Allowance w/  
\$1320 fee to PTO 8-14-00.  
Per Fred Briscol @ PTO w/ 0  
minutes & move forward 11-25-01  
Spoke w/ Christina Schell 11-27-02  
She does to meet the will try  
to correct  
stared info to Christina 11-18-02

INVENTOR

Woodall et al

SERIAL NO.

TITLE

Filed

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NC 78635



COMPUTAL SYSTEMS STATION, DAHLGREN LABORATION  
6703 West Hwy. 98, Code CP20L  
Panama City, FL 32407-7001  
tel (850) 234-4646 or (850) 234-4940  
fax (850) 235-5497

# fax

t r a n s m i t t a l

to: CHRISTINA DONNEL

Fax #: 703-308-6916

From: BRENDA PHILLIPS

Date: June 18, 2002

re: Ser 09/030,518 (78,635)

Pages: 9 Pages, including fax cover sheet

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Per our conversation 6/17/02, attached are copies of return receipt card from USPTO, Fee Transmittal for FY 2000, certificate of mailing, Response to Notice of Abandonment (Petition), Notice of Allowance and Issue Fee Due, Office Log. Please reinstate.

THE INFORMATION CONTAINED IN THIS FACSIMILE MESSAGE IS LEGALLY PRIVILEGED AND CONFIDENTIAL INFORMATION INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY NAMED ABOVE. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION OR COPY OF THIS TELECOPY IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS TELECOPY IN ERROR, PLEASE IMMEDIATELY NOTIFY US BY TELEPHONE AND RETURN THE ORIGINAL MESSAGE TO US AT THE ABOVE ADDRESS BY UNITED STATES MAIL. THANK YOU.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

GARCIA, FELIPE, ET AL.

Serial No.: 09/030,518

Filed: FEBRUARY 23, 1998

For: LINE CHARGE CONNECTOR

Examiner: J. HOWELL

Art Unit: 3641

RESPONSE TO NOTICE OF ABANDONMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

The above identified application became "abandoned for failure to timely pay the required issue fee" within the statutory period of three months from the mailing date of March 2, 1999. Abandonment was issued by the U.S. Patent and Trademark Office (USPTO) on July 24, 2000.

The Office of Patent Counsel at the U.S. Navy's Coastal Systems Station, Panama City, Florida replied to the Notice of Allowance and Issue Fee Due of 3/2/99 with the Issue Fee Transmittal signed by Harvey A. Gilbert, the Attorney of Record, and dated 4/6/99. Certificate of Mailing was signed by Brenda Phillips, Legal Assistant for the Office of Patent Counsel, dated 4/6/99. A copy of this documentation is enclosed. Also enclosed is a copy of this office's Patent Activity Log verifying that this action was taken. This indicates that the issue fee in the amount of \$1210.00 was sent to the USPTO on 4/6/99.

With this information, it appears that the Issue Fee

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01 FC:1452 110.00 DA



30 PTO  
8-14-02

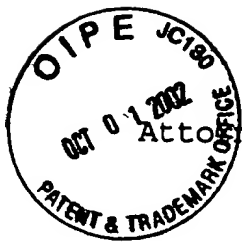
NAVY CASE NO. 78,635  
SERIAL NO. 09/030,518  
APPLICANT GARCIA, FELIPE ET AL.

Receipt of the following application papers is evidenced hereon by official stamp of the  
U. S. Patent and Trademark Office:

Response to Notice of Abandonment  
Copy of Notice of Allowance and Issue Fee Due  
Copy of Patent Log  
Certificate of Mail  
Card  
Transmittal Fee

NAVONR 5870/51 (Rev. 8-94)

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GROUP 3600



Attorney Docket No.: NC 78,635

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Applicant: GARCIA, FELIPE ET AL.

Serial No.: 09/030,518

Filing Date: February 23, 1998

For: LINE CHARGE CONNECTOR

Art Unit: 3641

Examiner: J. HOWELL

Assistant Commissioner for Patents  
Washington, D.C. 20231

RESPONSE TO NOTICE OF ABANDONMENT OF JULY 24, 2000

CERTIFICATE OF TRANSMISSION (37 C.F.R.1.6(d) and (1.8))

*I hereby certify that these papers, along with any paper referred to as being attached or enclosed, were mailed to the Assistant Commissioner for Patents, Washington, D.C. 20231 at the United States Patent & Trademark Office, on the date shown below:*

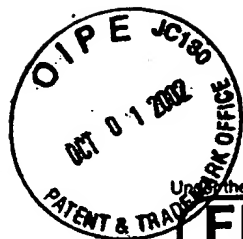
By:

*Harry C. Gilbert*

Date:

*8/10/02*

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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PTO/SB/17 (12/99)  
Approved for use through 09/30/2000. OMB 0651-0032  
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

# FEE TRANSMITTAL

## for FY 2000

Patent fees are subject to annual revision.  
Small Entity payments must be supported by a small entity statement,  
otherwise large entity fees must be paid. See Forms PTO/SB/09-12.  
See 37 C.F.R. §§ 1.27 and 1.28.

TOTAL AMOUNT OF PAYMENT (\$1320.00)

### Complete if Known

Application Number	09/030,518
Filing Date	Feb 23, 1998
First Named Inventor	Garcia, Felipe et al.
Examiner Name	J. Howell
Group / Art Unit	3641
Attorney Docket No.	78,635

<b>METHOD OF PAYMENT (check one)</b>  1. <input type="checkbox"/> The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:  Deposit Account Number <u>50-0833</u>  Deposit Account Name _____  <input checked="" type="checkbox"/> Charge Any Additional Fee Required Under 37 CFR §§ 1.18 and 1.17  2. <input type="checkbox"/> Payment Enclosed: <input type="checkbox"/> Check <input type="checkbox"/> Money Order <input type="checkbox"/> Other  <b>FEE CALCULATION</b>  1. BASIC FILING FEE <table><thead><tr><th>Large Entity</th><th>Small Entity</th><th>Fee Code</th><th>Fee (\$)</th><th>Fee Description</th><th>Fee Paid</th></tr></thead><tbody><tr><td></td><td></td><td>101</td><td>690</td><td>201 345 Utility filing fee</td><td></td></tr><tr><td></td><td></td><td>106</td><td>310</td><td>208 155 Design filing fee</td><td></td></tr><tr><td></td><td></td><td>107</td><td>460</td><td>207 240 Plant filing fee</td><td></td></tr><tr><td></td><td></td><td>108</td><td>690</td><td>208 345 Reissue filing fee</td><td></td></tr><tr><td></td><td></td><td>114</td><td>150</td><td>214 75 Provisional filing fee</td><td></td></tr></tbody></table> SUBTOTAL (1) (\$)  2. 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<b>SUBMITTED BY</b>		<b>Complete (if applicable)</b>	
Name (Print/Type)	HARVEY A. GILBERT	Registration No. (Attorney/Agent)	27331
Signature	<i>Harvey A. Gilbert</i>	Telephone	850-234-4646
		Date	8/15/00

### WARNING:

Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office

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NOTICE OF ALLOWANCE AND ISSUE FEE DUE

PM51/0002  
COASTAL SYSTEM STATION DAHLGREEN DIVISIO  
NAVAL SURFACE WARFARE CENTER  
6700 WEST HIGHWAY 98 CODE CP2L  
PANAMA CITY FL 32407-7001

BRENDA PHILLIPS  
*Brenda Phillips*  
4-16-99

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
09/030,518	02/23/98	011	HOWELL, J	3641 03/02/98
First Named Applicant	GARCIA, 35 USC 154(b) term ext. = 0 Days.			

TITLE OF INVENTION LINE CHARGE CONNECTOR

ATTYS DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
3 73805	039-001.130	PS1	UTILITY	NO	\$1210.00	06/02/98

HARVEY A. GILBERT

PROSECUTION ON THE MERITS IS CLOSED.

DONALD G. PECK

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

HOW TO RESPOND TO THIS NOTICE:

Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status as represented by the Secretary of the Navy.

If the SMALL ENTITY is shown as NO:

- A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or X
- B. If the status is the same, pay the FEE DUE shown above.

- A. Pay FEE DUE shown above, or

03-0814

- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.

I. All communications regarding this application must give application number and batch number.

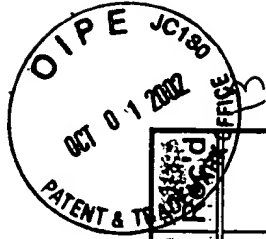
Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

YOUR COPY



PATENT - JG



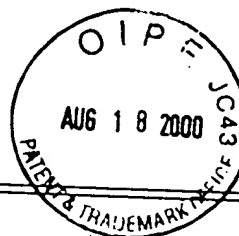
Navy Case #	Inventor(s)	Action	Date Rec'd	Date Due	Sent To	Date Mailed	Rec'd
79201	Ballaghen	Pat Appl.			PTO	3-11-99	
78193	Wine	O/A			PTO	3-15-99	
78752	Peterson	Pat Appl.			PTO	3-15-99	
77593	Hyland	O/A (Phonoc)			PTO	3-16-99	
78801	Nickel	Sting See			PTO	3-16-99	
78602	Conner	Drawings			PTO	3-16-99	
79774	Shelton	Pat Appl.			Connet	3-12-99	
781002	Conner/Duck	Drawings			Wilmington	3-12-99	
78527	Conner	O/A			PTO	3-12-99	
78193	Conner	Immediate O/A		1-2-99	Print	3-18-99	
791674	Woodall	Pat Appl.			PTO	3-20-99	
79204	David	Sting See			PTO	4-5-99	
78874	Nelson	Sting See			PTO	4-5-99	
79305	Disotto	✓			✓	4-10-99	
78635	Brucis	✓			✓	4-6	
78050	Vickens	Drawings			✓	4-6	
78448	Woodall	Draw See			✓	4-6	
78050	Vickens	Draw See			✓	4-6	
77452	Bruckner	✓			✓	4-6	
78806	Bruckner	✓			✓	4-6	
79593	Hyland	✓			✓	4-6	



NAVY CASE NO. 78,600  
SERIAL NO. 09/030,518  
APPLICANT GARCIA, FELIPE ET AL.

Receipt of the following application papers is evidenced hereon by official stamp of the U. S. Patent and Trademark Office:

Response to Notice of Abandonment  
Copy of Notice of Allowance and Issue Fee Due  
Copy of Patent Log  
Certificate of Mail  
Card  
Transmittal Fee



NAVONR 5870/51 (Rev. 8-94)

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**GROUP 3600**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
09/030,518	02/23/98	GARCIA	F 78635

7542/0724  
COASTAL SYSTEM STATION DAHLGREEN DIVISION  
NAVAL SURFACE WARFARE CENTER  
6700 WEST HIGHWAY 98 CDD  
PANAMA CITY FL 32407-700

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AUG 02 2000

EXAMINER
----------

HOWELL, J

ART UNIT	PAPER NUMBER
----------	--------------

3641

DATE MAILED:

7/27/01

### NOTICE OF ABANDONMENT

This application is abandoned in view of:

- ☐ Applicant's failure to timely file a proper response to the Office letter mailed on \_\_\_\_\_.
- ☐ A response (with a Certificate of Mailing or Transmission of \_\_\_\_\_) was received on \_\_\_\_\_, which is after the expiration of the period for response (including a total extension of time of \_\_\_\_\_ month(s)) which expired on \_\_\_\_\_.
- ☐ A proposed response was received on \_\_\_\_\_, but it does not constitute a proper response to the final rejection.
- (A proper response to a final rejection consists only of: a timely filed amendment which places the application in condition for allowance; a Notice of Appeal; or the filing of a continuing application under 37 CFR 1.62 (FWC).
- ☐ No response has been received.
- ☒ Applicant's failure to timely pay the required issue fee within the statutory period of three months from the mailing date of the Notice of Allowance.
- ☐ The issue fee (with a Certificate of Mailing or Transmission of \_\_\_\_\_) was received on \_\_\_\_\_.
- ☐ The submitted issue fee of \$ \_\_\_\_\_ is insufficient. The issue fee required by 37 CFR 1.18 is \$ \_\_\_\_\_.
- ☒ The issue fee has not been received.
- ☐ Applicant's failure to timely file new formal drawings as required in the Notice of Allowability.
- ☐ Proposed new formal drawings (with a Certificate of Mailing or Transmission of \_\_\_\_\_) were received on \_\_\_\_\_.
- ☐ The proposed new formal drawings filed \_\_\_\_\_ are not acceptable.
- ☐ No proposed new formal drawings have been received.
- ☐ The express abandonment under 37 CFR 1.62(g) in favor of the FWC application filed on \_\_\_\_\_.
- ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
- ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a) upon the filing of a continuing application.
- ☐ The decision by the Board of Patent Appeals and Interferences rendered on \_\_\_\_\_ and because the period for seeking court review of the decision has expired and there are no allowed claims.
- ☐ The reason(s) below:

**ABANDONMENT**  
**CONTACT PERSON IS:**  
**TOM HAWKINS**  
**305-8380**

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**GROUP 3600**



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

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FMS1/0302  
COASTAL SYSTEM STATION DAHLGREEN DIVISION  
NAVAL SURFACE WARFARE CENTER  
6703 WEST HIGHWAY 98 CODE CP2L  
PANAMA CITY FL 32407-7001

BRENDA PHILLIPS

*Brenda Phillips*  
4-16-99

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
09/030,518	02/23/98	011	HOWELL, J	03/02/99
First Named Applicant	GARCIA, .35 USC 154(b) term ext. = 0 Days.			

TITLE OF INVENTION LINE CHARGE CONNECTOR

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
0 70605	089-001.130	P81	UTILITY	NO	\$610.00	06/02/99

HARVEY A. GILBERT

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.**

DONALD G. PECK

**THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.**

**HOW TO RESPOND TO THIS NOTICE:**

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or X
- B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

A. Pay FEE DUE shown above, or

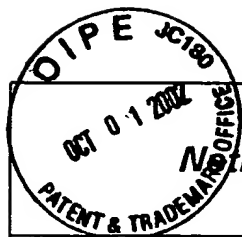
B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.


III. All communications regarding this application must give application number and batch number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

-YOUR COPY



# Notice of Allowability

Application No. <b>09/030,518</b>	Applicant(s) <b>Felipe Garcia</b>	
Examiner <b>Jeffrey Howell</b>	Group Art Unit <b>3641</b>	

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course.

☒ This communication is responsive to the amendment filed on 1/25/99

☒ The allowed claim(s) is/are 1-11

☒ The drawings filed on Jan 25, 1999 are acceptable.

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

☐ Applicant MUST submit NEW FORMAL DRAWINGS

☐ because the originally filed drawings were declared by applicant to be informal.

☐ including changes required by the Notice of Draftsperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. \_\_\_\_\_

☐ including changes required by the proposed drawing correction filed on \_\_\_\_\_, which has been approved by the examiner.

☐ including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

## Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

☐ Interview Summary, PTO-413

☐ Examiner's Amendment/Comment

☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

☒ Examiner's Statement of Reasons for Allowance

Charles T. Jordan  
Supervisory Patent Examiner  
Group 3600

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GROUP 3600

Art Unit: 3641

***Drawings***

1. The corrected or substitute drawings were received on 1/25/99. These drawings are acceptable.

***Allowable Subject Matter***

2. Claims 1-11 are allowed.
3. The following is an examiner's statement of reasons for allowance: The primary reason for the allowance of the claims in this case, is the inclusion of a clip that positions the ends of two detonating cords together included in the independent claim, in combination with the other elements recited.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Howell whose telephone number is (703) 305-0886. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Howell whose telephone number is (703) 305-0886. The examiner can normally be reached on Monday through Friday from 8:00 AM to 4:00 PM.

Art Unit: 3641

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Jordan, can be reached on (703) 306-4159. The fax phone number for the organization where this application or proceeding is assigned is (703) 306-4195.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-4177.

Charles T. Jordan  
Supervisory Patent Examiner  
Group 3600

JH

February 22, 1999



Form PTO-2001-11-97

U.S. DEPARTMENT OF COMMERCE-Patent and Trademark Office

Application No.

09/030518

## NOTICE OF DRAFTPERSON'S PATENT DRAWING REVIEW

The drawing filed (insert date) 1/25/99 are:

A. ☒ not objected to by the Draftperson under 37 CFR 1.84 or 1.152.

B. ☐ objected to by the Draftperson under 37 CFR 1.84 or 1.152 as indicated below. The Examiner will require submission of new, corrected drawings where necessary. Corrected drawings must be submitted according to the instructions on the back of this notice.

1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings:

Black ink. Color.

☐ Color drawing are not acceptable until petition is granted.

Fig(s) \_\_\_\_\_

☐ Pencil and non black ink is not permitted. Fig(s) \_\_\_\_\_

2. PHOTOGRAPHS. 37 CFR 1.84(b)

☐ Photographs are not acceptable until petition is granted.

☐ 3 full-tone sets are required. Fig(s) \_\_\_\_\_

☐ Photographs not properly mounted (must be on bristol board or photographic double-weight paper). Fig(s) \_\_\_\_\_

☐ Poor quality (half-tone). Fig(s) \_\_\_\_\_

3. TYPE OF PAPER. 37 CFR 1.84(c)

☐ Paper not flexible, strong, white and durable.

Fig(s) \_\_\_\_\_

☐ Erasures, alterations, overwritings, interlineations, folds, copy machine marks not acceptable. (too thin)

☐ Mylar, vellum paper is not acceptable (too thin).

Fig(s) \_\_\_\_\_

4. SIZE OF PAPER. 37 CFR 1.84(f): Acceptable sizes:

☐ 21.0 cm by 29.7 cm (DIN size A4)

☐ 21.6 cm by 27.9 cm (8 1/2 x 11 inches)

☐ All drawings sheets not the same size.

Sheet(s) \_\_\_\_\_

5. MARGINS. 37 CFR 1.84(g): Acceptable margins:

Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm

SIZE: A4 Size

Top 2.5 cm Left 2.5 cm Right Bottom 1.0 cm

SIZE: 8 1/2 x 11

☐ Margins not acceptable

☐ Top (T)

☐ Right

6. VIEWS.

REVIEW

7. SECTIONAL VIEWS. 37 CFR 1.84(h)(3)

☐ Hatching not indicated for sectional portions of an object.

Fig(s) \_\_\_\_\_

☐ Sectional designation should be noted with Arabic or

Roman numbers. Fig(s) \_\_\_\_\_

8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)

☐ Words do not appear on a horizontal, left-to-right fashion when page is either upright or turned, so that the top becomes the right side, except for graphs. Fig(s) \_\_\_\_\_

☐ Views not on the same plane on drawing sheet. Fig(s) \_\_\_\_\_

9. SCALE. 37 CFR 1.84(k)

☐ Scale not large enough to show mechanism without crowding when drawing is reduced in size to two-thirds in reproduction.

Fig(s) \_\_\_\_\_

10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(l)

☐ Lines, numbers & letters not uniformly thick and well defined, clean, durable and black (poor line quality).

Fig(s) \_\_\_\_\_

11. SHADING. 37 CFR 1.84(m)

☐ Solid black areas pale. Fig(s) \_\_\_\_\_

☐ Solid black shading not permitted. Fig(s) \_\_\_\_\_

☐ Shade lines, pale, rough and blurred. Fig(s) \_\_\_\_\_

12. NUMBERS, LETTERS, & REFERENCE CHARACTERS.

37 CFR 1.48(p)

☐ Numbers and reference characters not plain and legible.

Fig(s) \_\_\_\_\_

☐ Figure legends are poor. Fig(s) \_\_\_\_\_

☐ Numbers and reference characters not oriented in the same

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Attorney Docket No.: NC 78,635

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Applicant: Robert Woodall et al.  
Serial No.: 09/030,518  
Filing Date: February 23, 1997  
For: LINE CHARGE CONNECTOR

Art Unit: 3641  
Examiner: J. Howell

RESPONSE TO EXAMINER'S ACTION

Assistant Commissioner for Patents  
Box No Fee Amendment  
Washington, D.C. 20231

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Sir:

The following remarks are submitted in response to the Examiner's Action mailed December 3, 1998 in the above-identified application. A shortened statutory period of three months, expiring on March 3, 1998, was given for this filing in response to the Examiner's Action. This response is therefore timely submitted with a certificate of transmission under 37 C.F.R. 1.8(a) before expiration of the period for response. Entry of the response into the application under the provisions of 37 C.F.R. 1.115 is respectfully requested.

**CERTIFICATE OF TRANSMISSION (37 C.F.R.1.6(d) and (1.8))**

*I hereby certify that these papers, along with any paper referred to as being attached or enclosed, were mailed to the Assistant Commissioner for Patents, Washington, D.C. 20231 at the United States Patent & Trademark Office, on the date shown below:*

By: Harvey C. Gillett

Date: 1/18/99



avy Case No. 78,635

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

FELIPE GARCIA ET AL.

Serial No.: 09/030,518

Filed: February 23, 1998

For: LINE CHARGE CONNECTOR

Examiner: J. HOWELL

Art Unit: 3641

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AMENDMENT

Hon. Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

In response to the Office Action dated December 3, 1998,  
amend the above-identified patent application as follows:

In the Specification

Page 8, line 6, between "cord" and "and" insert --18--,  
between "boosters" and "by" delete "18" and substitute therefor  
--18'--.

Page 10, line 2, delete "tolls" and substitute therefor --  
tools--;

line 21, delete "35" and substitute therefor --  
33--.

Page 14, line 5, delete "18".

In the Claims

Claim 1, line 4, between "of" and "detonating" insert --a-  
-.

Claim 3, line 4, between "strength" and "between" insert -  
-members--.

Navy Case No. 78,635

Claim 6, line 2, delete "outed" and substitute therefor -- outer--.

Remarks

This is a complete response to the Office Action dated December 3, 1998.

Claims 1-11 remain in this application.

Objections to the Drawings

The objections to the drawings of paragraph 1 have been corrected by amendment to show reference characters "19" and "17a" on Figures 1 and 2 of Formal Drawings, included herewith, and as shown in red on a copy of these figures.

The objection to the drawings of paragraph 2 has been corrected by amendment which correctly designates detonating cord booster "18'" on line 6 of page 8.

The objection to the drawings of paragraph 3 has been corrected by amendment which substitutes reference character "33" for reference character "35" on line 21 of page 10.

Objections to the Specification

The objections to the disclosure of paragraph 4 have been corrected by amendment which substitutes "tools" for "tolls" on line 2 of page 10, and number "18" has been deleted by amendment from line 5 of page 14.

Claim Objections

The objections to claims 1 and 6 of paragraph 5 have been

Navy Case No. 78,635

corrected by amendments to these claims as suggested by the Examiner.

Rejection of Claims 3-11 Under U.S.C. 112, Second Paragraph

Claims 3-11 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention.

The Office Action identified the objectionable term "said strength" in line 4 of claim 3 since there was no antecedent basis for this term.

Line 4 of claim 3 has been amended to correctly recite "said strength members" which has antecedent basis in parent claim 1.

Withdrawal of this ground of rejection is requested.

Allowable Subject Matter

Claims 1 and 2 were allowed.

Claims 3-11 would be allowable if amended to overcome the rejection under 35 U.S.C. 112, 2<sup>nd</sup> paragraph. These claims have been so amended and are allowable.

All the claims define a patentably significant advance in the state of the art in definite form and free of the art.

Accordingly, an early Notice of Allowance is earnestly solicited.

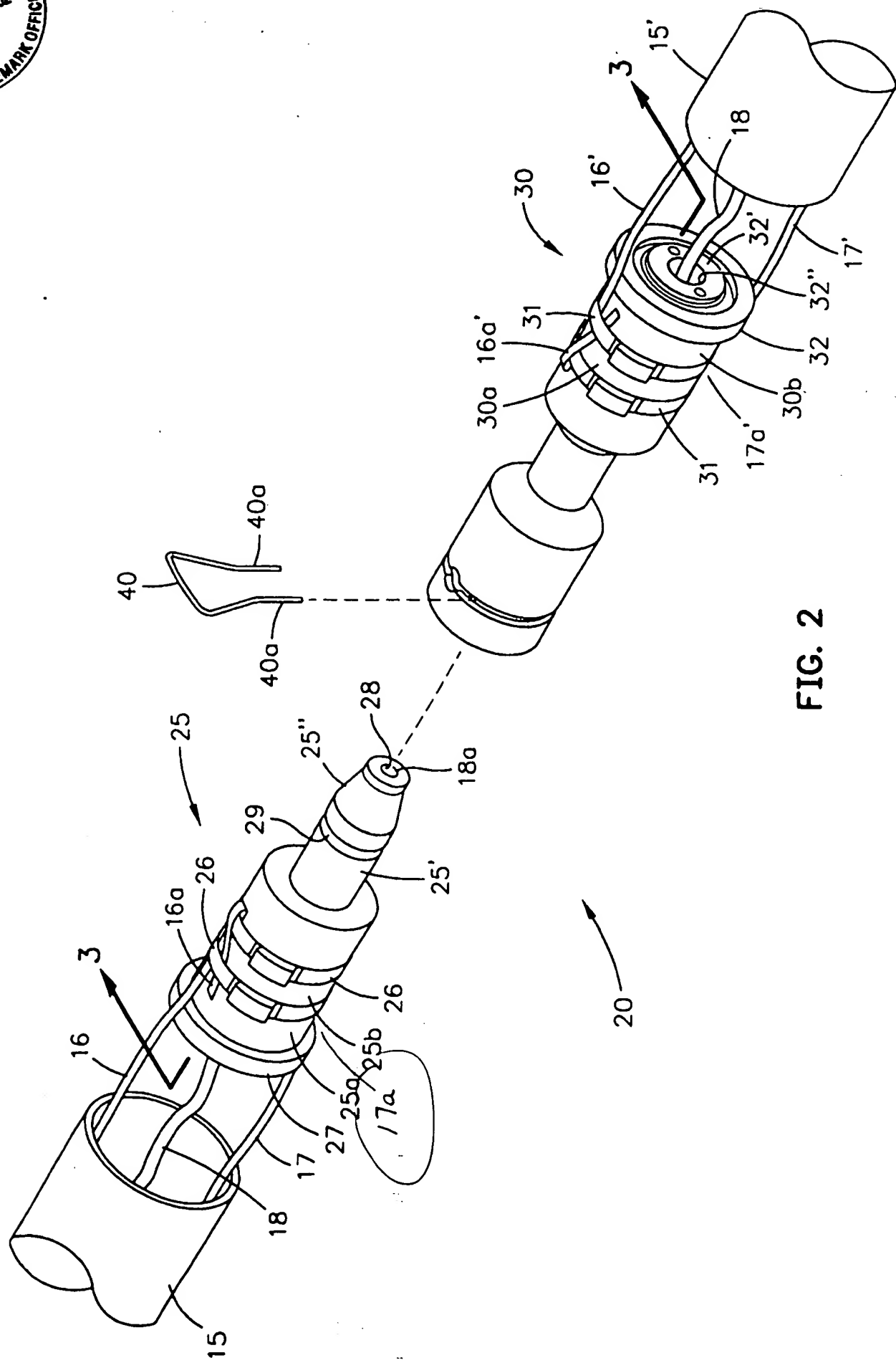
Navy Case No. 78,635

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Harvey A. Gilbert".

HARVEY A. GILBERT  
Attorney of Record  
Registration No. 27,331

H Gilbert  
COASTSYSSTA DAHLGREN DIV NSWC  
Panama City, FL 32407-7001  
(850) 234-4646  
29 December 1998



**FIG. 2**

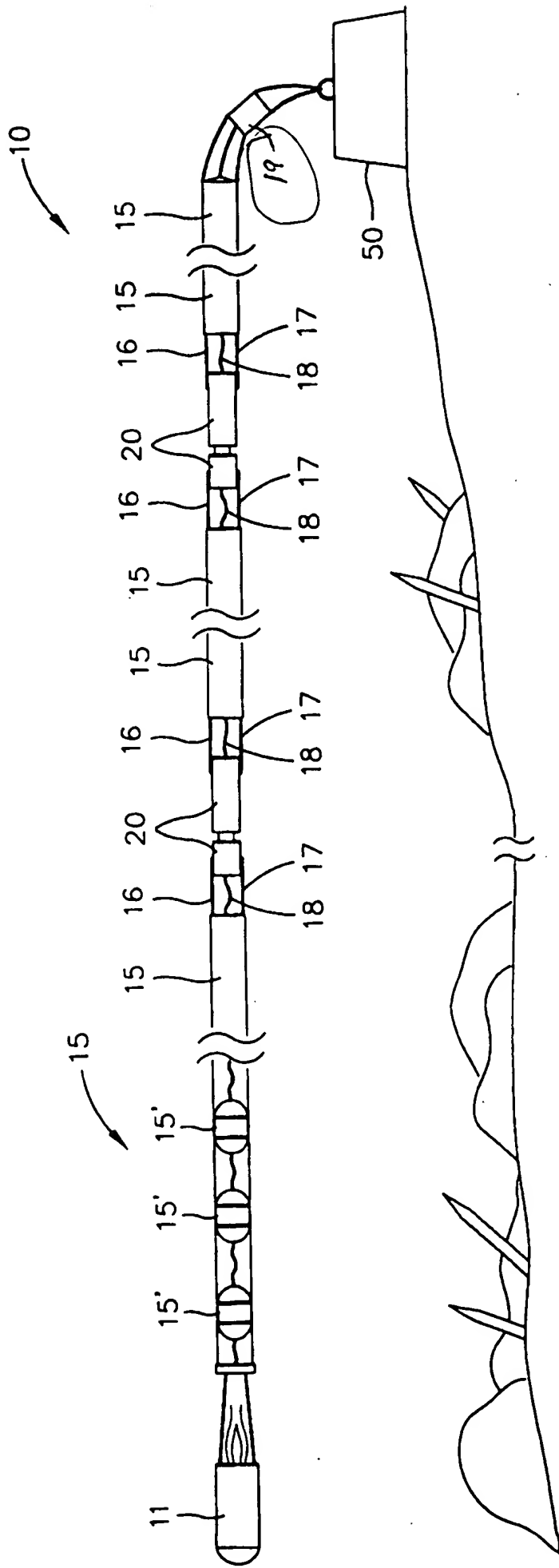


FIG. 1

Navy Case No. 78,635

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

FELIPE GARCIA ET AL.

Serial No.: 09/030,518

Filed: February 23, 1998

For: LINE CHARGE CONNECTOR

Examiner: J. HOWELL

Art Unit: 3641

Letter to the Official Draftsman

Hon. Commissioner of Patents and Trademarks  
Washington, D. C. 20231

Sir:

Subject to the Examiner's approval, corrected formal drawings are submitted. A copy showing the proposed changes in red is included herewith.

Respectfully submitted,



HARVEY A. GILBERT  
Attorney of Record  
Registration No. 27,331

H Gilbert  
COASTSYSSTA DAHLGREN DIV NSWC  
Panama City, FL 32407-7001  
(850) 234-4646  
29 December 1998

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GROUP 3600





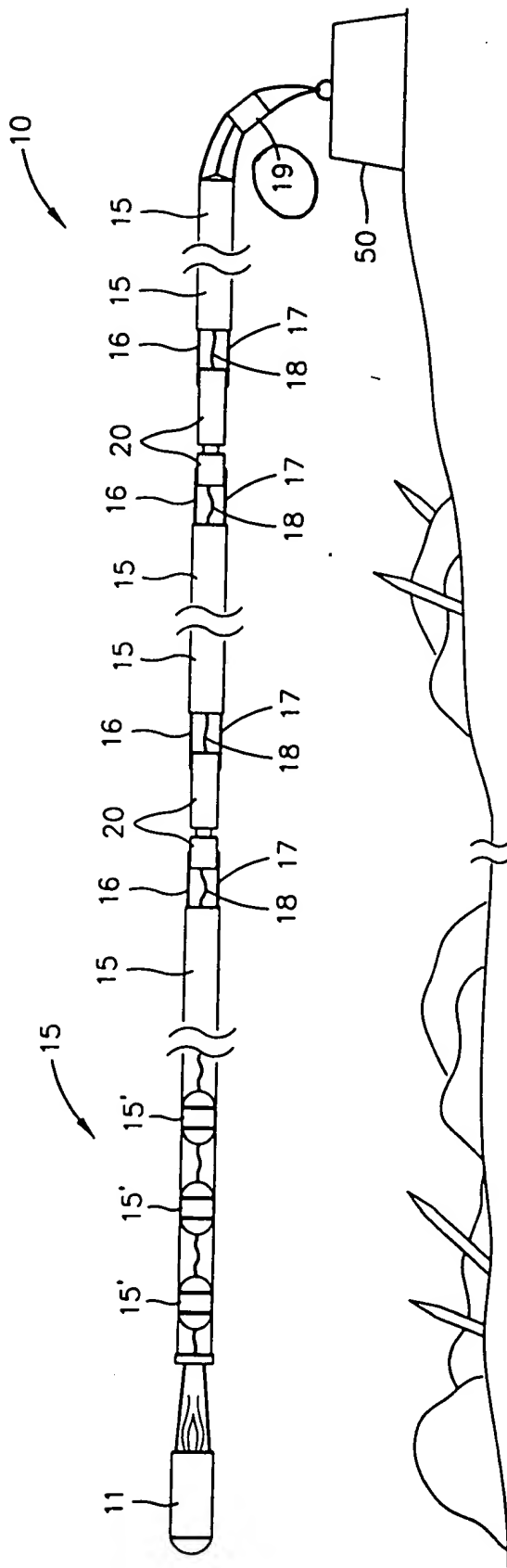


FIG. 1

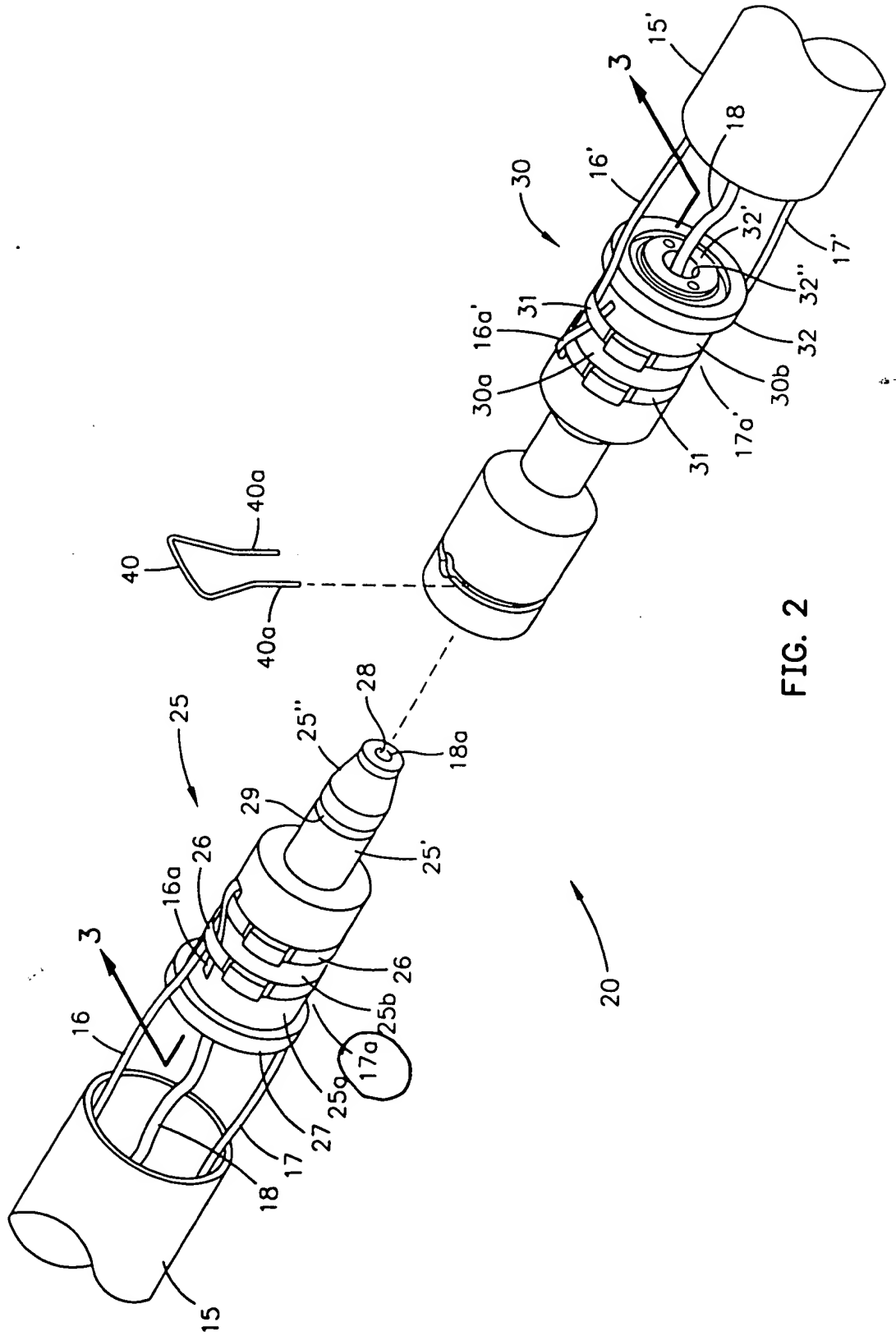
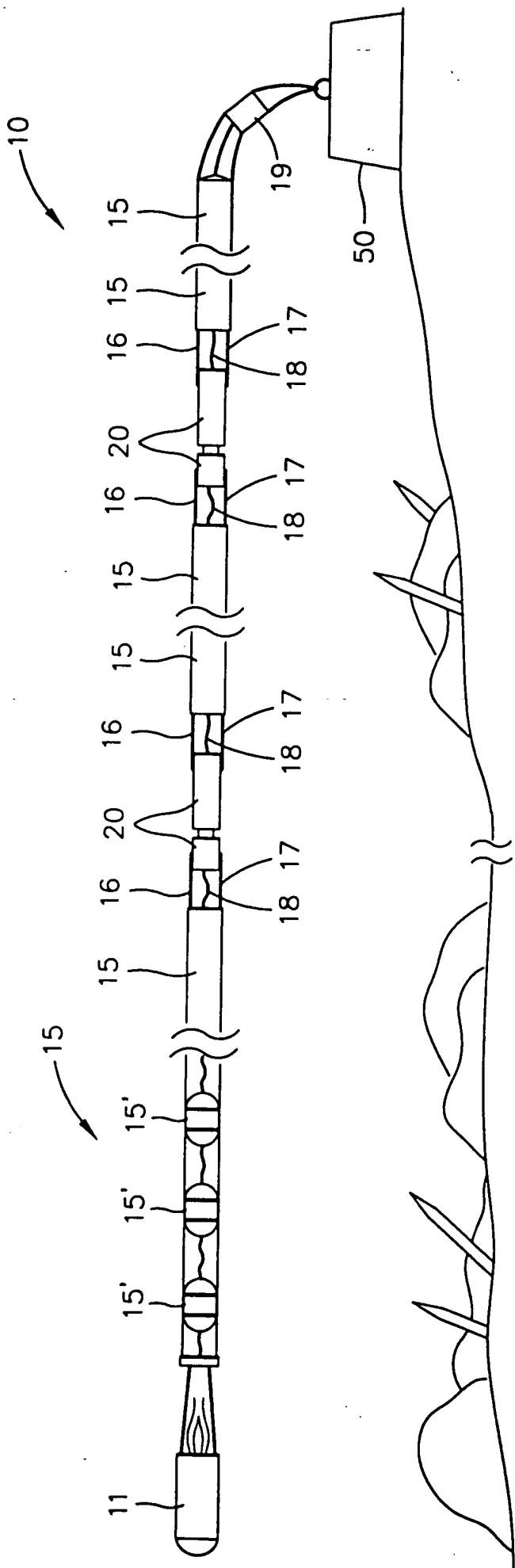
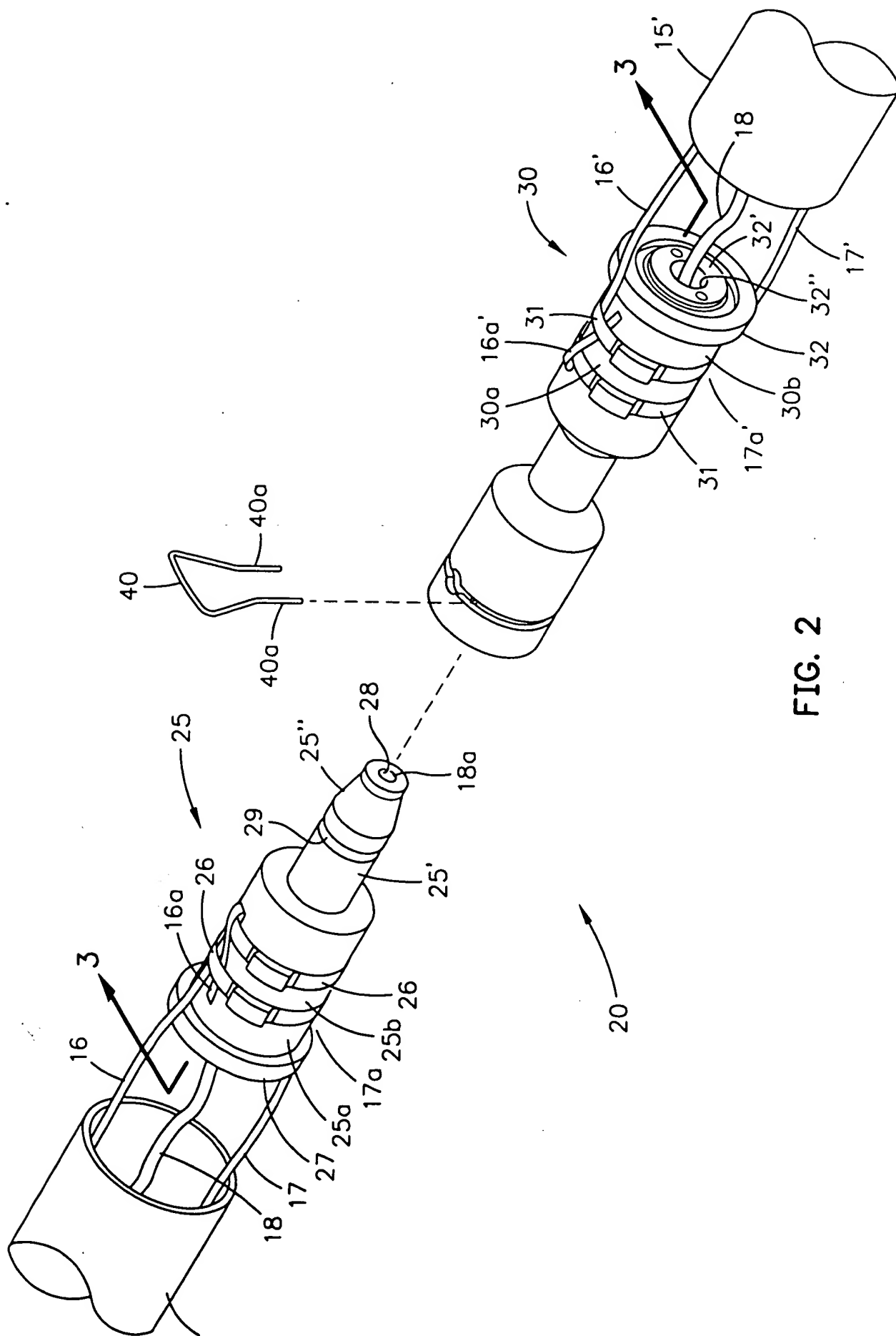


FIG. 2



**FIG. 1**



**FIG. 2**

FILING RECEIPT

78635  
UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
ASSISTANT SECRETARY AND COMMISSIONER  
OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTORNEY DOCKET NO.	DRWGS	TOT CL	IND CL
09/030,518	02/23/98	3722	\$790.00	78635	3	11	1

COASTAL SYSTEM STATION DAHLGREEN DIVISIO  
NAVAL SURFACE WARFARE CENTER  
6703 WEST HIGHWAY 98 CODE CP2L  
PANAMA CITY FL 32407-7001

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Application Processing Division's Customer Correction Branch within 10 days of receipt. Please provide a copy of the Filing Receipt with the changes noted thereon.

## Applicant(s)

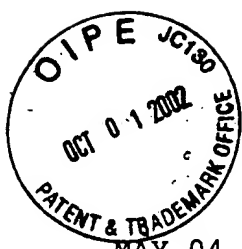
FELIPE GARCIA, PANAMA CITY, FL; ROBERT WOODALL,  
LYNN HAVEN, FL; GILBERTO IRIZARRY, PANAMA CITY BEACH, FL.

FOREIGN FILING LICENSE GRANTED 04/30/98

TITLE

LINE CHARGE CONNECTOR

PRELIMINARY CLASS:



MAY 04, 1998



78635  
UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
ASSISTANT SECRETARY AND COMMISSIONER  
OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

PTAS



\*100657136A\*

HARVEY A. GILBERT  
OFFICE OF COUNSEL, CODE CP2L  
6703 W HWY 98  
PANAMA CITY, FL 32407-7001

UNITED STATES PATENT AND TRADEMARK OFFICE  
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, NORTH TOWER BUILDING, SUITE 10C35, WASHINGTON, D.C. 20231.

RECORDATION DATE: 02/17/1998

REEL/FRAME: 9010/0543  
NUMBER OF PAGES: 2

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:

GARCIA, FELIPE

DOC DATE: 02/17/1998

ASSIGNOR:

WOODALL, ROBERT

DOC DATE: 02/17/1998

ASSIGNOR:

IRIZARRY, GILBERTO

DOC DATE: 02/17/1998

ASSIGNEE:

NAVY, UNITED STATES OF AMERICA AS REPRESENTED BY THE SECRETARY,  
THE  
BALLSTON TOWER ONE  
800 N. QUINCY STREET  
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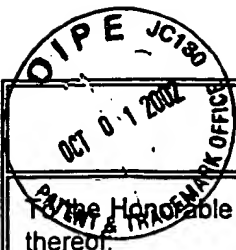
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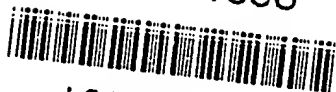
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LAWAN FLETCHER, EXAMINER  
ASSIGNMENT DIVISION  
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03-10-1998



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attached original documents or copy

2/17/98

## 1. Name of conveying party(ies):

FELIPE GARCIA, ROBERT WOODALL and GILBERTO IRIZARRY

2. Additional name(s) of conveying party(ies) attached  
yes/ ☒ no

## 3. Nature of conveyance:

☒ Assignment ☐ Merger ☐ Security Agreement  
☐ Change of Name ☐ Other

Execution Date: 17 Feb 98

## 2. Name &amp; address of receiving party(ies):

Name: The United States of America as  
Represented by the Secretary of the NavyInternal Address: Chief of Naval Research,  
Office of Counsel, Code OCCCStreet Address: Ballston Tower One  
800 N. Quincy Street

City: Arlington State: VA Zip: 22217-5660

Additional name(s) & address(es) attached? ☐ yes ☒ no

## 4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s)

B. Patent No.(s)

Navy Case No.: 78,635

Serial No. :

09030518

Additional numbers attached ☐ yes/ ☒ no

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## 5. Name and address of party to whom correspondence concerning document should be mailed:

Name: HARVEY A. GILBERT  
Internal Address: OFFICE OF COUNSEL, CODE CP2L  
COASTAL SYSTEMS STATION  
DAHLGREN DIVISION

Street Address: 6703 W HWY 98

City: PANAMA CITY State: FL Zip: 32407-7001

## 6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41) ..... \$ 40.00

☐ Enclosed ☒ Authorized to be charged to deposit account

8. Deposit Account Number: 04-0814

(Attach duplicate copy of this page if paying by deposit account)

## 9. Statement and signature:

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

HARVEY A. GILBERT Reg. No. 27331

Name of Person Signing

Signature

Date

CERTIFICATE OF MAILING (37 CFR §1.8a)

I hereby certify that these papers, along with any paper referred to as being attached or enclosed, are being deposited with the United States Postal Service on the date shown below with sufficient postage in an envelope addressed to the: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

By:

HARVEY A. GILBERT  
Patent Counsel  
Registration No. 27331

Date:

Total number of pages including, cover sheet, attachments, and document: \_\_\_\_\_



ASSIGNMENT

WHEREAS, We, FELIPE GARCIA, ROBERT WOODALL, and GILBERTO IRIZARRY while employed by the Government of the United States, have invented certain new and useful improvements in:

**LINE CHARGE CONNECTOR**

identified as Navy Case No. 78,635 described in application for Letters Patent of the United States of America executed by me on February 17, 1998; and

WHEREAS, the Government of the United States, represented by the Secretary of the Navy and hereinafter referred to as the Government, is desirous of acquiring an assignment of the invention disclosed in said application and other rights and benefits herein granted; and

WHEREAS, the conditions under which the invention was made are such as to entitle the Government under Paragraph 1(a) of Executive Order 10096, to the entire right, title and interest therein, including foreign rights; and

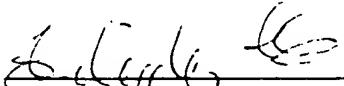
WHEREAS, as to foreign rights, it is the policy of the Government to obtain an option to exercise such rights;

NOW, THEREFORE, in consideration of the premises and other good and valuable consideration the receipt of which is hereby acknowledged, we hereby assign and transfer to the Government the entire right, title and interest in and to said invention within the United States of America, its territories and possessions, and the entire right, title and interest in and to said application and any continuation, division or substitution thereof, and such Letters Patent to be held by the Government to the end of the term for which said Letters Patent may be granted, as fully and entirely as the same would have been held by us had this assignment not been made.

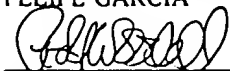
We do hereby also grant unto the Government, the option to take the entire right, title and interest in the invention and all patent applications or other forms of protection thereon in all countries foreign to the United States in which the Government may file, or cause to be filed, applications for Letter Patent or other forms of protection, without payment of any consideration; provided, however that this grant of an option to take foreign rights in the invention, or applications or other forms of protection thereon, shall have force and effect only as to such applications filed in foreign countries within six months of the filing date of any application for United States Letter Patent covering the invention, or within six months from the declassification of the invention, whichever is later, and that all foreign rights exercised under the option are left to me subject to a nonexclusive, irrevocable, royalty-free license to the Government in any patent or other form of protection which may issue on said invention in any foreign country, including the power to issue sublicenses for use in behalf of the Government and/or in furtherance of the foreign policies of the Government.

We hereby further agree to make, execute, and deliver to the Government, any and all papers, documents, affidavits, statements, or other instruments that may be necessary in the prosecution of the application and of any continuation, division or substitution of the application, or any application for reissue or extension of said Letters Patent, and to assist the Government in every way in protecting the invention as may be requested, provided that any expense arising through such efforts will be paid by the Government.

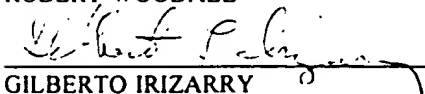
IN TESTIMONY WHEREOF, We have set our hands and affixed our seals.

  
FELIPE GARCIA

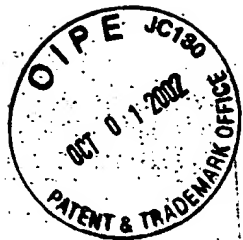
Date 17 Feb. 98

  
ROBERT WOODALL

Date 17 February 98

  
GILBERTO IRIZARRY

Date 17 February 98



SERIAL NO. 78,635

APPLICANT

**Felipe Garcia, Robert Woodall and Gilbert Irizarry**

Receipt of the following application papers is evidenced hereon by official stamp of the  
U. S. Patent and Trademark Office:

Patent Application

Assignment

Declaration

Application Transmittal Form

1 postcard

Specification 21 pgs, 11 claims, abstract 1 pg

3 sheets formal drawings

JC523 U.S. PTO

09/030518



02/23/98

ATTY: HARVEY A. GILBERT, REC #27331

VCNR 5870/51 (Rev. 8-94)

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*File*

DEPARTMENT OF THE NAVY  
COASTAL SYSTEMS STATION  
6703 W HWY 98 CODE CP2L  
PANAMA CITY FL 32407-7001

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OFFICIAL BUSINESS

COASTAL SYSTEMS STATION  
NAVAL SURFACE WARFARE CENTER  
6703 W HWY 98 CODE CP2L  
PANAMA CITY FL 32407-7001

NAVY CASE NO. 78,635

SERIAL NO.

APPLICANT Felipe Garcia,,Robert Woodall and Gilbert Irizarry

Receipt of the following application papers is evidenced hereon by official stamp of the  
U. S. Patent and Trademark Office:

Patent Application

Assignment

Declaration

Application Transmittal Form

1 postcard

Specification 21 pgs, 11 claims, abstract 1 pg

3 sheets formal drawings

ATTY: HARVEY A. GILBERT, REC #27331

NAVONR 6870/51 (Rev. 8-84)

## PATENT

Coastal Systems Station  
 Dahlgren Division  
 Naval Surface Warfare Center  
 Code CP2L  
 6703 W. Hwy 98  
 Panama City, FL 32407-7001

COMMISSIONER OF PATENTS AND TRADEMARKS  
 Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application for  
 Inventor(s): FELIPE GARCIA, ROBERT WOODALL and GILBERTO IRIZARRY  
 For: LINE CHARGE CONNECTOR

Enclosed are:

- ☒ 3 sheet(s) of formal drawing(s).
- ☐        sheet(s) of informal drawing(s).
- ☒ Assignment of the invention to: The United States of America represented by the Secretary of the Navy.
- ☒ Declaration and Power of Attorney.
- ☐ Information Disclosure Statement with Attachment(s)

CLAIMS AS FILED				
FOR	NUMBER FILED	NUMBER EXTRA	RATE	BASIC FEE \$790.00
TOTAL CLAIMS	11 =	-0-	x \$22.00 =	
INDEPENDENT CLAIMS	1 =	-0-	x \$82.00 =	
TOTAL FILING FEE				\$790.00

- ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit overpayment to Account No. 04-0814.
- ☒ Please charge my Deposit Account No. 04-0814 in the amount of \$790.00. A duplicate copy of this sheet is enclosed.

Date: 2/17/98

*Harvey A. Gilbert*  
 HARVEY A. GILBERT  
 Patent Counsel  
 Attorney of Record  
 Registration No. 27331  
 (850) 234-4646

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Navy Case 78635

APPLICATION FOR LETTERS PATENT

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT FELIPE GARCIA, a resident of Panama City, ROBERT WOODALL, a resident of Lynn Haven and GILBERTO IRIZARRY, a resident of Panama City Beach, State of Florida, being citizens of the United States of America, have invented certain new and useful improvements of which the following is a specification.

A handwritten signature in cursive script that reads "Harvey A. Gilbert".

HARVEY A. GILBERT  
Attorney of Record  
Registration Number 27,331  
Coastal Systems Station, Dahlgren Division  
Naval Surface Warfare Center  
6703 West Highway 98, Code CP2L  
Panama City, FL 32407-7001

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Navy Case No. 78635

LINE CHARGE CONNECTOR  
Statement of Government Interest

1 The invention described herein may be manufactured and  
2 used by or for the Government of the United States of America  
3 for governmental purposes without the payment of any royalties  
4 thereon or therefor.  
5

6 Cross Reference to Related Application

7 This is a continuation in part of copending U. S. patent  
8 applications entitled "Line Charge Insensitive Munition  
9 Warhead" by Felipe Garcia et al., U.S. Patent and Trademark  
10 Office Serial No. (NC 78,448), filed and "Reliable and  
11 Effective Line Charge System" by Felipe Garcia et al., U.S.  
12 Patent and Trademark Office Serial No. (NC 78,433), filed  
13 and incorporates all references and information thereof by  
14 reference herein.

15 Background of the Invention

16 This invention relates to deployable munitions. In  
17 particular, this invention relates to line charges for clearing  
18 mines and obstacles that are made up from explosive segments  
19 joined together by connectors which withstand severe deployment  
20 forces and position detonation components for each segment to  
21 reliably deploy and detonate the line charges.

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1 Anti-personnel obstacles and/or mines have been cleared  
2 from narrow passageways or lanes using a number of different  
3 explosive devices. Among these devices, however, the above  
4 referenced line charge system has proven to be one of the most  
5 effective. This line charge has a preassembled series of  
6 warheads and a common detonating cord extends through them. A  
7 rocket motor pulls the line charge across a designated area,  
8 the cord is detonated by a fuze, and the exploding warheads  
9 clear the obstacles and mines from a lane that extends the  
10 length of the line charge. Notwithstanding the effectiveness  
11 of this line charge, the firing teams which deploy it and other  
12 obstacle breaching systems have found that sometimes obstacles  
13 and/or mines must be cleared from lanes that are longer than  
14 the lengths of the preassembled line charges. Heretofore,  
15 there has been no effective means to rapidly and reliably  
16 connect together portable explosive sections of warheads or  
17 other explosives to form differently sized line charges for  
18 clearing obstacles and mines over longer distances. Connecting  
19 some existing breaching systems together has been a laborious  
20 task requiring tools to perform necessary modifications. No  
21 connector existed to quickly connect two or more parts of a  
22 line charge together in an economical and rapid manner while  
23 maintaining structural integrity during deployment and

1 preserving critical tolerances needed to transfer explosive  
2 detonation between parts. Most contemporary line charges are  
3 built at the factory as complete units without any means to  
4 connect units together in longer line charges.

5 Thus, in accordance with this inventive concept, a need  
6 has been recognized in the state of the art for connectors that  
7 interconnect explosive segments of line charges rapidly and  
8 reliably in the field to form differently sized line charges  
9 for clearing obstacles and mines over different distances.

10 Summary of the Invention

11 The invention is directed for providing a connector for  
12 segments. A male portion of the connector has coupling  
13 elements to connect to strength members of one segment and an  
14 axial bore to secure and position one end of detonating cord  
15 that extends from the segment. A female portion of the  
16 connector has coupling elements to connect to strength members  
17 of another segment and an axial bore to secure and position one  
18 end of another detonating cord extending from the other  
19 segment. A spring clip extends through the female portion and  
20 engages part of the male portion which is sized to be inserted  
21 in the female portion and engaged by the spring clip. This  
22 places the ends of the detonating cords adjacent one another  
23 and assures transfer of detonation between them.



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1       An object of the invention is to provide a connector to  
2 join explosive segments of line charges for clearing lanes  
3 through mines and obstacles.

4       Another object of the invention is to provide a line  
5 charge having connectors joining explosive segments to allow  
6 for the modification of the demolition capability of the line  
7 charge as needed.

8       Another object of the invention is to provide rapid and  
9 reliable connections of portable explosive segments by a firing  
10 team to clear lanes through differently sized areas.

11       Another object is to provide a connector between explosive  
12 segments of a line charge that withstands deployment loads  
13 while assuring detonation of the explosive segments.

14       Another object is to provide means of connecting two or  
15 more explosive segments in the field without tools.

16       Another object of the invention is to provide a connector  
17 that assures transfer of detonation between detonation cords  
18 and detonation boosters on detonating cords.

19       Another object of the invention is to provide a connector  
20 that axially and linearly aligns explosive components that  
21 transfer detonation among explosive segments of a line charge.

22       Another object is to provide a connector that positively  
23 locks to ensure structural integrity of line charges.

1 Another object of the invention is to provide lightweight,  
2 economical, and rapidly coupled connectors between explosive  
3 segments of a line charge that maintain structural integrity  
4 during deployment and transfer detonation between the  
5 detonating cords and boosters of each explosive segment.

6 These and other objects of the invention will become more  
7 readily apparent from the ensuing specification when taken in  
8 conjunction with the appended claims.

9 Brief Description of the Drawings

10 Figure 1 is a schematic representation of a line charge  
11 having a plurality of explosive segments joined by connectors  
12 as it is being deployed across obstacles and mines to clear a  
13 safe lane.

14 Figure 2 isometrically depicts a connector having  
15 separated male and female portions, and the spring clip removed  
16 from the female portion.

17 Figure 3 is a longitudinal cross-sectional view of the  
18 male and female portions taken generally along lines 3-3 in  
19 Figure 2 but showing the male and female portions connected  
20 together by the spring clip.

21 Figure 4 is an enlarged cross-sectional view taken along  
22 lines 4-4 in Figure 3 showing spring clip on large and small

1 clip rails in the female portion engaging the groove of the  
2 male portion.

3 Description of the Preferred Embodiment

4 Referring to Figure 1 of the drawings, line charge 10 is  
5 schematically depicted being deployed by an interconnected  
6 rocket motor 11. Motor 11 pulls line charge 10 across an area  
7 laden with mines and other obstacles that block or interfere  
8 with free passage through it. Detonation of the deployed line  
9 charge 10 clears a safe and uncluttered passageway.

10 Line charge 10 includes a plurality of elongate explosive  
11 segments 15 coupled together by a plurality of interposed  
12 connectors 20. Only three explosive segments 15 are shown  
13 coupled together by two connectors 20; it is understood that  
14 more or less could be joined by an appropriate number of  
15 connectors 20 to clear longer or shorter paths as needed.

16 Each explosive segment 15 contains a number of serially  
17 arranged explosive charges or warheads 15' that are each  
18 appropriately connected to elongate flexible strength members  
19 16 and 17 that extend from one end to the other end. Only a  
20 few explosive charges or warheads 15' are shown in the leftmost  
21 explosive segment 15 in Figure 1 to avoid unnecessary  
22 distraction from this invention; it is understood that each  
23 explosive segment 15 contains as many such charges 15' as are

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1 needed to successfully complete different missions as they  
2 arise. The explosive charges are selected from a wide variety  
3 of explosive materials and are appropriately sized and spaced  
4 apart to accomplish the task at hand. Strength members 16 and  
5 17 are suitably sized natural or manmade flexible lines or  
6 cables, e. g., nylon or metal strands, to provide support  
7 during the severe loading encountered as line charge 10 is  
8 deployed.

9 The explosives of each explosive segment 15 are detonated  
10 by detonating cord 18 that extends the length of each explosive  
11 segment 15. Detonating cord 18 is, preferably, routed through  
12 openings in each explosive charge contained in each explosive  
13 segment 15. Consequently, when each detonating cord 18 is  
14 detonated, all the explosive charges in all explosive segments  
15 are exploded virtually simultaneously.

16 Clearing a lane through an area requires that line charge  
17 10 is emplaced to lie across the area. Then, it is detonated.  
18 A proven method of accurately emplacing line charge 10 relies  
19 on coupling rocket motor 11 to one end and a drag or an  
20 anchoring device 50 to the other end. Anchoring device 50 may  
21 be a fixed solid structure at the near side of the area, a  
22 drogue chute, or a combination of the two, for example. Rocket  
23 motor 11 is aimed to cross the obstructed area. When it is

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1 fired, it accelerates rapidly and pulls line charge 10 along  
2 with it. Anchoring device 50 may stop line charge 10 violently  
3 from going further. During the launching and stopping phases,  
4 connectors 20 hold strength members 16 and 17 of explosive  
5 segments 15 together. Initiation of detonation in detonation  
6 cord and detonation cord boosters 18 by fuze 19 detonates line  
7 charge 10 throughout to break up, blow-out-of-the-way, and/or  
8 detonate the obstacles/mines.

9 Referring to Figure 2, connector 20, fabricated in  
10 accordance with this invention, gives the firing team that  
11 deploys line charge 10 the capability to change it in the field  
12 for different breaching operations. Explosive segments 15 can  
13 be carried by the firing team to the area to be breached. All  
14 that the team needs to do is merely add or take away explosive  
15 segments 15 by connecting the mating portions of male and  
16 female portions 25 and 30 of connector 20 via spring clip 40.

17 Male portion 25 is secured to end portions 16a and 17a of  
18 strength members 16 and 17 of explosive segment 15 via a pair  
19 of metal or synthetic ring-shaped clamps 26 that may have  
20 rounded or flat, strap-like cross-sectional shapes. Clamps 26  
21 may be rigid, but more likely are adjustable with mutually  
22 engaging sections tightened and/or otherwise secured to couple  
23 end portions 16a and 17a of strength members 16 and 17 to male

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1 portion 25. End portions 16a and 17a are wrapped about clamps  
2 26. The wrapped clamps 26 are slid along outer surface 25a of  
3 male portion 25 toward annular rim 27 which radially extends  
4 from male portion 25. Clamps 26 clamp end portions 16a and 17a  
5 on knurled surfaces 25b on outer surface 25a of male portion  
6 25. In addition, if clamps 26 are positioned next to annular  
7 rim 27, clamps 26 also clamp end portions 16a and 17a against  
8 annular rim 27. This mechanical cooperation secures male  
9 portion 25 to strength members 16 and 17 of one explosive  
10 segment 15.

11 Female portion 30 is secured to end portions 16a' and 17a'  
12 of strength members 16' and 17' of explosive segment 15' via a  
13 pair of metal or synthetic clamps 31 that may have rounded or  
14 flat, strap-like cross-sectional shapes. Clamps 31 may be  
15 rigid, but more likely are adjustable with mutually engaging  
16 sections. End portions 16a' and 17a' are wrapped about clamps  
17 31. The wrapped clamps 31 are slid along outer surface 30a of  
18 female portion 30 toward annular rim 32 which radially extends  
19 from female portion 30. Clamps 31 clamp end portions 16a' and  
20 17a' on knurled surfaces 30b on outer surface 30a of female  
21 portion 30. In addition, if clamps 31 are positioned next to  
22 annular rim 32, clamps 31 also clamp end portions 16a' and 17a'  
23 against annular rim 32. This mechanical cooperation secures

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1 female portion 30 to strength members 16' and 17' of another  
2 explosive segment 15. No tools are needed to connect the male  
3 and female portions 25 and 30 together.

4 If, however, the mating portions of connector 20 have not  
5 been previously mounted on ends of strength members 16 and 17,  
6 this mounting can be done in the field by the firing team with  
7 small hand tools. The firing team can quickly attach male and  
8 female portions 25 and 30 to opposite ends of strength members  
9 16 and 17 by merely sliding clamps 26 and 31 off of male and  
10 female portions 25 and 30, looping end portions 16a and 17a and  
11 16a' and 17a' of strength members 16 and 17 through rings 26  
12 and 31, respectively. Next, clamps 26 and wrapped ends 16a and  
13 17a are respectively slid along surfaces 25a and 25b to rim 27,  
14 and clamps 31 and wrapped ends 16a' and 17a' are slid along  
15 surfaces 30a and 30b to rim 32.

16 Detonating cord 18 is secured into bores 28 and 33 of male  
17 and female portions 25 and 30 in the factory using epoxy 28"  
18 and 35' in bores 28' and 35. Detonating cord 18 is secured  
19 into bores 28 and 33 of male and female portions 25 and 30 in  
20 the field by frictionally fitting and engaging detonating cord  
21 18 in bores 28 and 35, see Figure 3. Bores 28 and 33 are sized  
22 to frictionally engage the lateral surfaces of opposite ends  
23 18a and 18b of detonating cords 18 or detonating cord boosters

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1 18' attached to detonating cords 18 of each explosive segment  
2 15. The frictional engagement is such as to hold opposite ends  
3 18a and 18b in close proximity when male and female portions 25  
4 and 30 are coupled together by spring clip 40. This close  
5 proximity of ends 18a and 18b is within predetermined tolerance  
6 limits required to assure transfer of detonation between  
7 adjacent explosive segments. These tolerances are maintained  
8 by precisely engaging and locating end portions 18a and 18b of  
9 the detonating cords by the critically sized bores 28 and 33 in  
10 male and female portions 25 and 30. Consequently, when  
11 detonation of the line charge is initiated by detonating the  
12 detonating cord in one explosive segment, detonation of all the  
13 interconnected explosive segments will occur virtually  
14 simultaneously. Note that frictional connection in the field  
15 is not as reliable to maintain critical tolerances as the epoxy  
16 method performed at the factory.

17 Details of male and female portions 25 and 30 are shown in  
18 Figures 3 and 4. Male and female portions 25 and 30 that have  
19 been previously mounted on opposite ends of strength members  
20 16, 17, 16', and 17' of two explosive segments 15 are easily  
21 connected together by spring biased legs 40a of spring clips  
22 40. Legs 40a interlock annular groove 29 machined in elongate



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1 part 25' of male portion 25. Interlocking legs 40a in groove  
2 29 secure male and female portions 25 and 30 together.

3 Spring clip 40 is releasably mounted in female portion 30  
4 during storage and transit. Spring clip 40 is retained on  
5 large clip rail 30' and small clip rail 30" to extend through  
6 female portion 30. Large and small clip rails 30' and 30" are  
7 formed in female portion 30 when parts of it are machined-away  
8 to create openings 36. Legs 40a of clip 40 reach through  
9 openings 36 and into bore 34 of female portion 30.

10 All that is needed to connect male and female portions 25  
11 and 30 together is to insert elongate part 25' of male portion  
12 25 into bore 34 of female portion 30. Tapered front section  
13 25" spreads legs 40a apart as elongate part 25' of male portion  
14 25 is being inserted in bore 34. When legs 40a become radially  
15 aligned with portions of annular groove 29 in male portion 25,  
16 legs 40a of spring clip 40 snap into annular groove 29 to  
17 interlock male portion 25 in female portion 30. This occurs  
18 without any tools or unnecessary delay.

19 Female portion 30 is made of aluminum alloy 6061-T651 a  
20 lightweight material that is strong enough to sustain the  
21 deployment loads associated with deployment by rocket motor 11.  
22 Other suitable lightweight and strong materials could be used,  
23 e. g., nylon, space-age plastics, combinations of such

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1 materials, etc. Female portion 30 is anodized to limit  
2 corrosion potential in moist salt environments and to create a  
3 low friction sliding surface which eases insertion of elongate  
4 part 25' of male portion 25 into bore 34 of female portion 30.  
5 Bore 34 is appropriately sized to allow male portion 25 to  
6 slide into and fit inside of it and is aligned with the other  
7 bores of female portion 30. Female portion 30 has a third bore  
8 35 for passing end portion 18b of detonating cord 18 through it  
9 and feeding it to aligned bore 33. Bore 33 is narrower than  
10 bore 34 to secure and position end portion 18b of detonation  
11 cord 18.

12 Male portion 25 also is made of aluminum alloy 6061-T651  
13 in order to sustain the deployment loads associated with rocket  
14 deployment. Other suitable lightweight and strong materials  
15 could be used, e. g., nylon, space-age plastics, combinations  
16 of such materials, etc. Male portion 25 is also anodized to  
17 limit corrosion potential in moist salt environments and to  
18 create a low friction sliding surface to ease insertion of  
19 elongate part 25' into bore 34 of female portion 30. Tapered  
20 front section 25" of male portion 25 is cone-shaped to  
21 facilitate alignment and ease of insertion into bore 34 of  
22 female portion 30. As mentioned above, annular groove 29 is  
23 provided adjacent tapered front section 25" of male portion 25

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1 to receive spring clip 40 for interlocking and holding male and  
2 female portions 25 and 30 together. Bore 28 of male portion 25  
3 is appropriately sized to align and position end portions 18a  
4 and 18b of detonating cords 18 in male and female portions 25  
5 and 30 18 to assure uninterrupted, continuous detonation  
6 between adjacent explosive segments 15 of line charge 10.  
7 Optionally, to enhance reliability of detonation between  
8 adjacent explosive segments 15, detonating boosters 18' may be  
9 crimped or otherwise suitably attached to detonating cords 18  
10 in male portion 25 and female portion 30. When detonating  
11 boosters 18' are included on detonating cords 18 in male and  
12 female portions 25 and 30, ends 18a and 18b will be the ends of  
13 detonating boosters 18'.

14 Male portion 25 has a second bore 28' that may be filled  
15 with a suitable bonding agent 28", such as epoxy, to secure  
16 detonating cord 18 after it passes through opening 27" of plug  
17 27'. This filling with a suitable bonding agent will occur  
18 when male portion 25 is assembled and attached to explosive  
19 segment 15 at the factory. When connectors 20 might have to be  
20 secured to explosive segments 15 in the field, bonding agent  
21 28" may have to be dispensed with. End portion 18a of  
22 detonating cord 18 is additionally secured in male portion 25  
23 by being frictionally engaged in aligned bore 28.

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1 Third bore 35 of female portion 30 may be filled with a  
2 suitable bonding agent 35', such as epoxy, to secure detonating  
3 cord 18 after it passes through opening 32" of plug 32'. This  
4 filling with a suitable bonding agent will occur when female  
5 portion 30 is assembled and attached to explosive segment 15 at  
6 the factory. When connectors 20 might have to be secured to  
7 explosive segments 15 in the field, bonding agent 35' may have  
8 to be dispensed with. End portion 18b of detonating cord 18 is  
9 additionally secured in female portion 30 by being frictionally  
10 engaged in aligned bore 33.

11 When male portion 25 is fitted in female portion 30 and  
12 spring clip 40 engages groove 29, end portions 18a and 18b of  
13 detonation cords 18 and detonating boosters 18' of adjacent  
14 explosive segments 15 are aligned and sufficiently in contact  
15 or close proximity with each other to assure mutual detonation.  
16 This proximity between end portions throughout line charge 10  
17 will assure detonation of all explosive segments 15.

18 The advantages of connector 20 in line charges 10 over  
19 previous explosive systems and methods of deployment are  
20 numerous. Connector 20 allows for the rapid connection of two  
21 explosive segments 15 by the firing team in the field to allow  
22 several explosive segments 15 to be carried separately, so that  
23 the firing team can carry the total payload in containers

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1 carried by individual soldiers. Connector 20 provides a light  
2 weight, economical, and rapid connection method for connecting  
3 together multiple line charge segments without the need for  
4 tools. Connector 20 maintains critical tolerances between  
5 detonating cord boosters and detonating cords to assure  
6 explosive transfer. Strength members of adjacent segments 15  
7 may be attached to the connector in an effective manner.  
8 Connector 20 provides axial and linear self alignment of  
9 explosive components needed for the transfer of a detonation  
10 from one line explosive segment to the next. Connector 20  
11 provides a positive lock thereby ensuring line charge  
12 structural integrity. Connector 20 also provides for low  
13 friction at the sliding interfaces between male and female  
14 portions 25 and 30. Additionally, the knurling provided on the  
15 exterior surfaces increases the frictional forces that rings 26  
16 and 31 and rims 27 and 32 exert when attached to strength  
17 members 16 of explosive segments 15 of line charge 10.

18 In the representative embodiment set out herein, only two  
19 strength members 16 were shown in each explosive segment 15  
20 only for the purpose of an example. Other arrangements and  
21 numbers of strength members could be interconnected to  
22 connector 20 in accordance with this invention. In addition,  
23 this invention not only is capable of coupling explosive

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1 segments together. These segments might be, for example,  
2 segments of an aerially deployed life line containing strong  
3 lines or hawsers, segments of electrical power cables, or  
4 segments of water or POL supply hoses. When connected  
5 according to this invention, the joined segmented structure can  
6 reach across barriers or other impasses. The connector of this  
7 invention can be modified to provide these capabilities and  
8 still be within the scope of this inventive concept.

9 Connector 20 joining explosive segments 15 of line charge  
10 has been described using an exemplary arrangement of  
11 components. This arrangement is not to be construed as  
12 limiting, but rather is intended for demonstrating this  
13 inventive concept. The disclosed components and their  
14 arrangements as disclosed herein all contribute to the novel  
15 features of this invention. These novel features assure more  
16 reliable and effective deployment of multi capable line charges  
17 10 to successfully complete different missions as they arise.  
18 It is to be understood that the configuration of the components  
19 of connector 20 could be modified to accommodate different  
20 applications and still be within the scope of this inventive  
21 concept. In addition, different materials could be selected to  
22 provide sufficient strength and durability for the task at hand  
23 without departing from the scope of this invention. If elastic

1 limits of the strength members or other materials used in the  
2 construction of the original embodiment are exceeded during  
3 deployment, then alternative materials may be used to account  
4 for increased loading rates.

5 Therefore, it is to be understood that, having the  
6 teachings of this invention in mind, one skilled in the art to  
7 which this invention pertains can select other combinations of  
8 materials and arrangements thereof and still be within the  
9 scope of this invention. Similarly, the capabilities of the  
10 invention that were disclosed herein were selected for  
11 demonstration of some salient features of this invention. They  
12 are not to be construed to limit the scope of this invention.

13 It should be readily understood that many modifications  
14 and variations of the present invention are possible within the  
15 purview of the claimed invention. It is to be understood that  
16 within the scope of the appended claims the invention may be  
17 practiced otherwise than as specifically described.

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I claim:

1 Claim 1 - A connector for segments comprising:

2 a male portion having coupling elements to attach strength  
3 members of one segment thereto and an axial bore to secure and  
4 position one end of detonating cord extending from said  
5 segment;

6 a female portion having coupling elements to attach  
7 strength members of another segment thereto and an axial bore  
8 to secure and position one end of another detonating cord  
9 extending from said other segment; and

10 a spring clip extending through said female portion to  
11 engage part of said male portion, said part of said male  
12 portion being sized to be inserted in said female portion and  
13 engaged by said spring clip to place said ends of said  
14 detonating cords adjacent one another to assure transfer of  
15 detonation between them.

1 Claim 2 - An apparatus according to claim 1 in which said male  
2 and female portions adjacently position said ends of said  
3 detonating cords to transfer detonation between said detonating  
4 cords and said detonation cords have detonation boosters  
5 attached thereto.



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1    Claim 3 - An apparatus according to claim 2 in which said  
2    coupling elements are an annular rim radially extending from  
3    said female portion and clamps engaging lengths of said  
4    strength between said clamps and said annular rim.

1    Claim 4 - An apparatus according to claim 3 in which said  
2    female portion has a second bore sized to receive said part of  
3    said male portion therein and said spring clip has leg portions  
4    extending into said second bore of said female portion.

1    Claim 5 - An apparatus according to claim 4 in which said part  
2    of said male portion has a tapered section to ease insertion in  
3    said second bore and spread said leg portions apart and said  
4    part of said male portion is provided with an annular groove  
5    sized to receive said spring clip to interlock said male and  
6    female portions together.

1    Claim 6 - An apparatus according to claim 5 in which said  
2    female portion has its outer surface knurled to help engage  
3    said strength members and said male and female portions are  
4    anodized to ease mutual interconnection and resist corrosion.

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1    Claim 7 - An apparatus according to claim 6 in which said male  
2    and female portions each have enlarged bores next to said axial  
3    bores to pass lengths of said detonating cords to said axial  
4    bores and to reduce weight.

1    Claim 8 - An apparatus according to claim 7 in which said male  
2    and female portions are cylindrically-shaped and are fabricated  
3    to reduce drag during deployment.

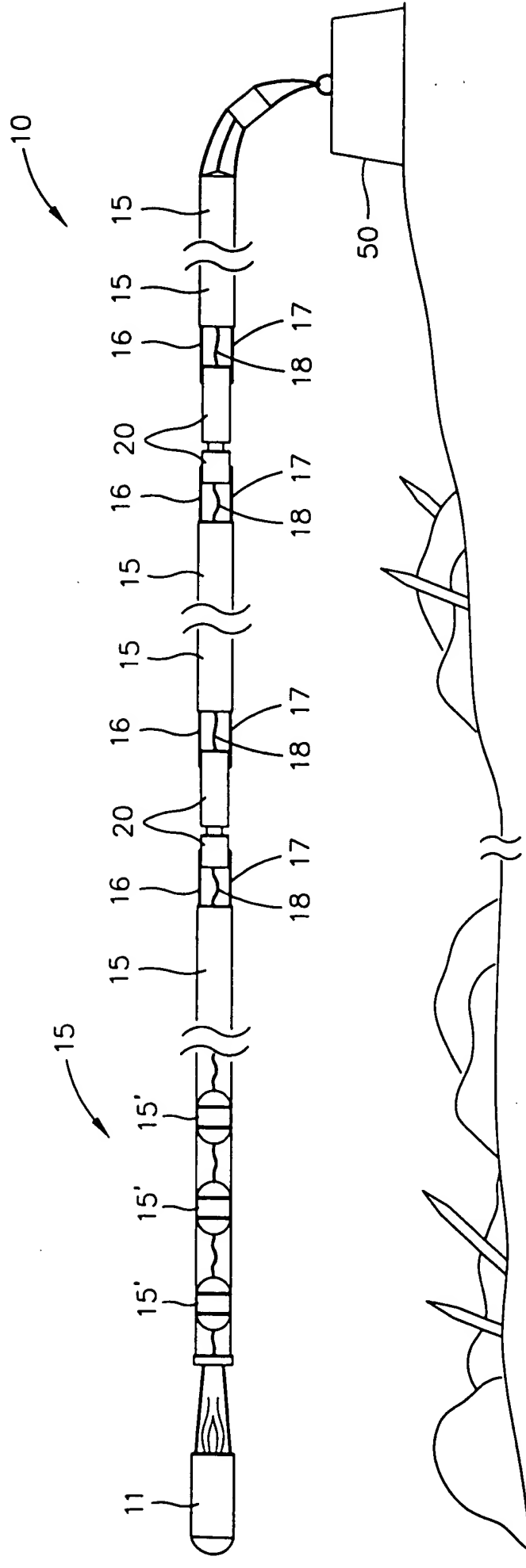
1    Claim 9 - An apparatus according to claim 8 in which said male  
2    and female portions are fabricated from at least one of the  
3    group of lightweight and strong materials consisting of  
4    aluminum, nylon, and synthetic plastics.

1    Claim 10 - An apparatus according to claim 9 in which said  
2    segments are a plurality of explosive segments coupled together  
3    by a plurality of said connectors which each secure adjacent  
4    explosive segments together in an elongate line charge.

1    Claim 11 - An apparatus according to claim 10 in which said  
2    ends of said detonating cords are connected to detonation  
3    boosters to enhance reliability.

Abstract of the Disclosure

1       A lightweight connector rapidly secures two or more  
2 explosive segments of a line charge together in the field  
3 without requiring tools. Structural integrity during  
4 deployment is maintained and uninterrupted detonation between  
5 the detonating cords or detonating cord boosters of each  
6 explosive segment of the line charge is assured. The connector  
7 includes male and female portions that each engage strength  
8 members of separate, different explosive segments and have  
9 bores adapted to receive and position ends of detonating cords.  
10 A spring clip secures the male and female portions together to  
11 assure structural integrity during deployment and to hold the  
12 ends of the detonation cords or detonation cord boosters  
13 adjacent one another to assure uninterrupted detonation  
14 throughout the line charge. The lightweight line charge made  
15 from interconnected explosive segments and connectors may be  
16 rapidly changed in the field to clear lanes of different  
17 lengths through obstacles and/or mines.



**FIG. 1**

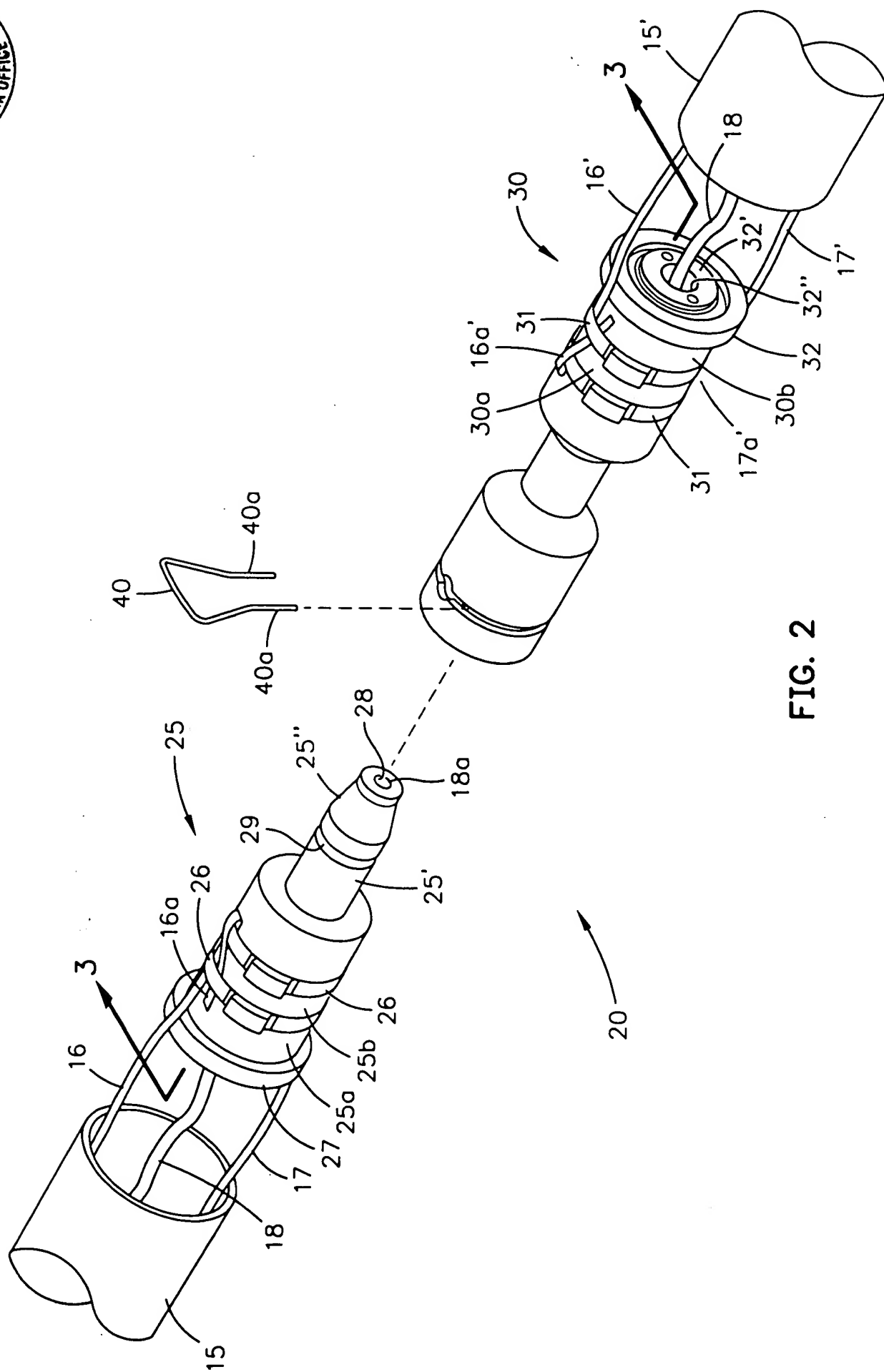


FIG. 2

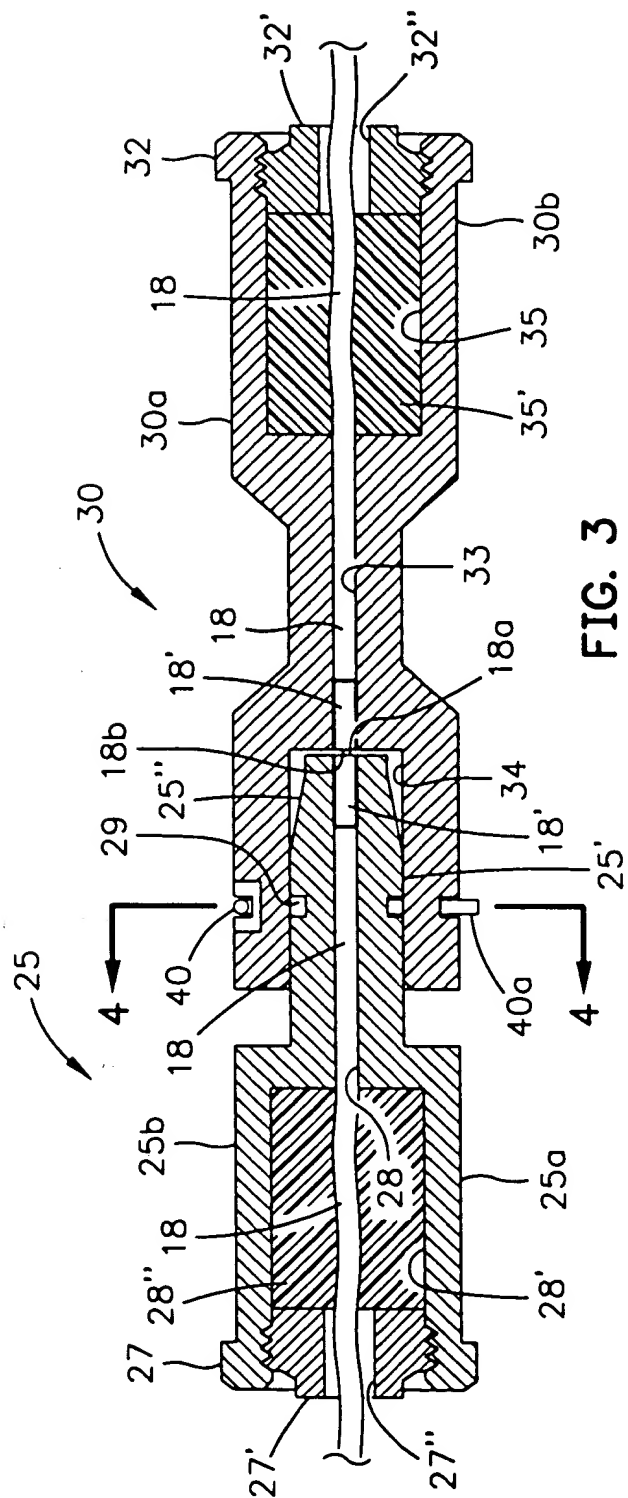


FIG. 3

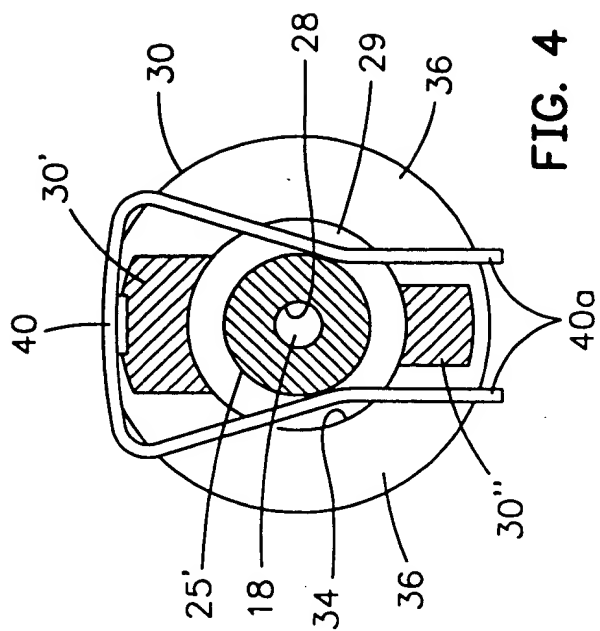
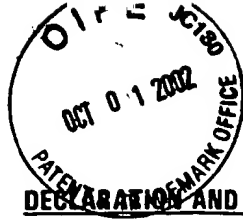


FIG. 4



**DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION**

As below named inventors, We hereby declare that:

Our residences, post office addresses, and citizenships are as stated below next to our name.

We believe we are the original, first, and joint inventors of the subject matter which is claimed and for which a patent sought on the invention entitled:

**LINE CHARGE CONNECTOR**

the specification of which is enclosed.

We hereby state that we have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

We acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

**POWER OF ATTORNEY:** As the named inventors, we hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith and hereby certify that the Government of the United States has the irrevocable right to prosecute this application:

**HARVEY A. GILBERT**  
Registration No. 27331

**SEND CORRESPONDENCE TO:**  
COASTAL SYSTEMS STATION, DAHLGREN DIVISION  
NAVAL SURFACE WARFARE CENTER  
6703 W HWY 98 CODE CP2L  
PANAMA CITY FL 32407-7001

**DIRECT TELEPHONE CALLS TO:**  
HARVEY A. GILBERT  
(850) 234-4646

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Inventor's signature *Felipe Garcia*

Citizenship: USA

Date: 12 Feb 98

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Residence 731 N BAY DRIVE, LYNN HAVEN, FL 32444  
Post Office Address 731 N BAY DRIVE, LYNN HAVEN, FL 32444  
Inventor's signature *Robert Woodall*

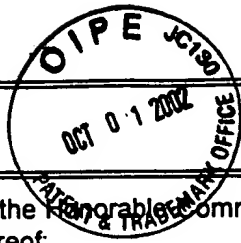
Citizenship: USA

Date: 17 February 98

Full name of inventor GILBERTO IRIZARRY  
Residence 3103 LAURIE AVENUE, PANAMA CITY BEACH, FL 32408  
Post Office Address 3103 LAURIE AVENUE, PANAMA CITY BEACH, FL 32408  
Inventor's signature *Gilberto Irizarry*

Citizenship: USA

Date: 17 February 98



RECORDATION FORM COVER SHEET  
PATENTS ONLY

To the Honorable Commissioner of Patents & Trademarks: Please record the attached original documents or copy thereof:

1. Name of conveying party(ies):

FELIPE GARCIA, ROBERT WOODALL and GILBERTO IRIZARRY

2. Additional name(s) of conveying party(ies) attached  
yes/ ☒ no

3. Nature of conveyance:

☒ Assignment ☐ Merger ☐ Security Agreement  
☐ Change of Name ☐ Other

Execution Date: 17 Feb 98

2. Name & address of receiving party(ies):

Name: The United States of America as  
Represented by the Secretary of the Navy

Internal Address: Chief of Naval Research,  
Office of Counsel, Code OCCC

Street Address: Ballston Tower One  
800 N. Quincy Street

City: Arlington State: VA Zip: 22217-5660

Additional name(s) & address(es) attached? yes ☒ no

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is: \_\_\_\_\_

A. Patent Application No.(s)

B. Patent No.(s)

Navy Case No.: 78,635

Serial No. :

Additional numbers attached yes/ ☒ no

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: HARVEY A. GILBERT  
Internal Address: OFFICE OF COUNSEL, CODE CP2L  
COASTAL SYSTEMS STATION  
DAHLGREN DIVISION

Street Address: 6703 W HWY 98

City: PANAMA CITY State: FL Zip: 32407-7001

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41) ..... \$ 40.00

☐ Enclosed ☒ Authorized to be charged to deposit account

8. Deposit Account Number: 04-0814

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9. Statement and signature:

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

HARVEY A. GILBERT Reg. No. 27331  
Name of Person Signing

*Harvey A. Gilbert*  
Signature

2/17/98  
Date

CERTIFICATE OF MAILING (37 CFR §1.8a)

I hereby certify that these papers, along with any paper referred to as being attached or enclosed, are being deposited with the United States Postal Service on the date shown below with sufficient postage in an envelope addressed to the: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

By: *Harvey A. Gilbert*  
HARVEY A. GILBERT  
Patent Counsel  
Registration No. 27331

Date: 2/17/98

Total number of pages including, cover sheet, attachments, and document: \_\_\_\_\_



## ASSIGNMENT

WHEREAS, We, FELIPE GARCIA, ROBERT WOODALL, and GILBERTO IRIZARRY while employed by the Government of the United States, have invented certain new and useful improvements in:

**LINE CHARGE CONNECTOR**

identified as Navy Case No. 78,635 described in application for Letters Patent of the United States of America executed by me on February 17, 1998; and

WHEREAS, the Government of the United States, represented by the Secretary of the Navy and hereinafter referred to as the Government, is desirous of acquiring an assignment of the invention disclosed in said application and other rights and benefits herein granted; and

WHEREAS, the conditions under which the invention was made are such as to entitle the Government under Paragraph 1(a) of Executive Order 10096, to the entire right, title and interest therein, including foreign rights; and

WHEREAS, as to foreign rights, it is the policy of the Government to obtain an option to exercise such rights;

NOW, THEREFORE, in consideration of the premises and other good and valuable consideration the receipt of which is hereby acknowledged, we hereby assign and transfer to the Government the entire right, title and interest in and to said invention within the United States of America, its territories and possessions, and the entire right, title and interest in and to said application and any continuation, division or substitution thereof, and such Letters Patent to be held by the Government to the end of the term for which said Letters Patent may be granted, as fully and entirely as the same would have been held by us had this assignment not been made.

We do hereby also grant unto the Government, the option to take the entire right, title and interest in the invention and all patent applications or other forms of protection thereon in all countries foreign to the United States in which the Government may file, or cause to be filed, applications for Letter Patent or other forms of protection, without payment of any consideration; provided, however that this grant of an option to take foreign rights in the invention, or applications or other forms of protection thereon, shall have force and effect only as to such applications filed in foreign countries within six months of the filing date of any application for United States Letter Patent covering the invention, or within six months from the declassification of the invention, whichever is later, and that all foreign rights exercised under the option are left to me subject to a nonexclusive, irrevocable, royalty-free license to the Government in any patent or other form of protection which may issue on said invention in any foreign country, including the power to issue sublicenses for use in behalf of the Government and/or in furtherance of the foreign policies of the Government.

We hereby further agree to make, execute, and deliver to the Government, any and all papers, documents, affidavits, statements, or other instruments that may be necessary in the prosecution of the application and of any continuation, division or substitution of the application, or any application for reissue or extension of said Letters Patent, and to assist the Government in every way in protecting the invention as may be requested, provided that any expense arising through such efforts will be paid by the Government.

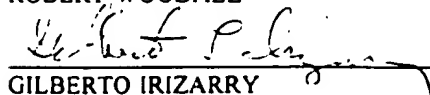
IN TESTIMONY WHEREOF, We have set our hands and affixed our seals.

  
\_\_\_\_\_  
FELIPE GARCIA

Date 17 Feb 98

  
\_\_\_\_\_  
ROBERT WOODALL

Date 17 February 98

  
\_\_\_\_\_  
GILBERTO IRIZARRY

Date 17 February 98



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